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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,108	09/09/2003	Gerald H. Negley	5308-311	4336

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EXAMINER	
LE, THAO X	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/659,108	NEGLEY ET AL.	
	Examiner	Art Unit	
	Thao X. Le	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,5,9-15,17,18 and 29-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,5,9-15,17,18 and 29-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 33-38 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6531328 to Chen.

Regarding claim 33, Chen discloses a mounting substrate for a semiconductor light emitting device (LED) in fig. 18 comprising: a block 8, col. 4 line 42, including a cavity 11, col. 4 line 46, in a first face (top) thereof that is configured for mounting the semiconductor LED 3, col. 4 line 7, therein, a conformal insulating coating 15, col. 5 line 7, on a surface of the block 8 and in the cavity 11; and first and second spaced apart conductive traces 17/18, col. 5 line 10, on the conformal insulating coating 15 in the cavity 11 that are configured for connection to the semiconductor LED 3, fig. 18; wherein the first and second spaced apart conductive traces 17/18 extend from the cavity 11 to the first face, around at least one side (the side is the left and right vertical portions connects to the bottom surface) of the block 8 and onto a second face (bottom) of the block 8 that is opposite the first face, fig. 18.

Regarding claims 34-35, Chen discloses the mounting substrate according to claim 33 wherein the first and second spaced apart conductive traces 17/18 on the conformal insulating coating 15 in the cavity 11 comprise reflective material, column 2 line 15 and col. 4 line 17, wherein in combination with the semiconductor light emitting device 3 that is mounted in the cavity 11 and is connected to the first and second spaced apart conductive traces 17/18, fig. 18.

Regarding claims 36-38, Chen discloses the mounting substrate according to claim 33 further in combination with a lens 23, col. 5 line 58, that extends across the cavity 11, in further combination with an encapsulant 5, col. 5 line 52, between the semiconductor light emitting device 3 and the lens 23, further combination with a lens retainer (leg portion of 5) on the block that is configured to hold the lens 23 across the cavity 11, fig. 18.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 5, 9-15, 17-, 20, 29-32 and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6531328 to Chen in view of US 2004/0041757 to Yang.

Regarding claim 3, Chen discloses a mounting substrate for a semiconductor light emitting device in fig. 17 comprising: a solid silicon block 8, column 4 line 43, including a cavity 11, col. 4 line 46, in a first face (where 3 is located) thereof that is configured for mounting a semiconductor light emitting device (LED) 3 therein, column 5 line 24, and a conformal insulating coating 15 comprising silicon oxide, column 5 line 4, on a surface of the solid silicon block 8, and in the cavity; and first and second spaced apart conductive traces 17/18, column 5 line 10, on the conformal insulating coating 15 in the cavity 11 that are configured for connection to the light emitting device 3, wherein the first and second spaced apart conductive traces 17/18 extend from the cavity 11 to the first face, around at least one side (the side is the vertical portion connects to the bottom surface) of the block 8 and onto a second face (bottom) of the block 8 that is opposite the first face, fig. 17.

But, Chen does not disclose a solid block is aluminum and an insulating layer is aluminum oxide.

However, Yang However, Yang discloses a mounting substrate for a semiconductor LED device in fig. 7 wherein the LED is mounting on the

aluminum block (metal plate) 43 (0027) comprising conformal insulating coating comprising insulating aluminum oxide layer 42 (0022J completely surrounds the aluminum block 43, fig.7. At the time the invention was made; it would have been obvious to one of ordinary skill in the ad to use the conformal aluminum oxide surrounding the aluminum block teaching of Yang to replace the silicon and silicon oxide of Chen, because in such structure the aluminum oxide layer would have good heat conductivity and providing good heat dispersion as taught by Yang, see abstract. Furthermore, aluminum would have better thermal conductivity than that of silicon as confirmed Chen (6599768) in table 1.

Regarding claims 5, 17, 40, Chen discloses the mounting substrate according to Claim 3 wherein the first and second spaced apart 17/18 on the conformal insulating coating 15 in the cavity 11 comprise reflective material, column 2 line 15 and col. 4 line 17.

Regarding claim 9, Chen discloses the mounting substrate for a semiconductor light emitting device (LED) in fig. 18 comprising: a solid silicon block 8 including a cavity 11 in a first face (top surface) thereof that is configured for mounting the semiconductor LED 3 therein; a conformal insulating coating comprising silicon oxide 15 on a surface of the solid silicon block 8, and in the the cavity 11; and first and second spaced apart conductive traces 17/18 on the conformal insulating coating 15in the cavity 11 that are configured for connection to the semiconductor LED 3, fig. 18; wherein the solid substrate block 8 includes therein first and second through holes 14, column 4 line 58 that extend from the first face outside the cavity (the holes 14 are below the cavity; thus

they are outside the cavity) to a second face (bottom) of the solid block 8 that is opposite the first face, the respective first and second through holes 14 including a respective first and second conductive via therein that extends from the first face outside the cavity (the conductive 17/18 are below the cavity; thus they are outside the cavity) to the second face (bottom) and wherein a respective one of the spaced apart conductive traces 17/18, column 5 lines 5-10, is electrically connected to a respective one of the conductive vias 14, fig. 18.

But, Chen does not disclose a solid block is aluminum and an insulating layer is aluminum oxide and the holes including the conformal insulating coating thereon that comprises aluminum oxide.

However, Yang However, Yang discloses a mounting substrate for a semiconductor LED device in fig. 7 wherein the LED 71 is mounting on the aluminum block 43 (0027) and holes 45 [0023] comprising conformal insulating coating aluminum oxide layer 42 (0022) fig.7. At the time the invention was made; it would have been obvious to one of ordinary skill in the ad to use the conformal aluminum oxide surrounding the aluminum block teaching of Yang to replace the silicon and silicon oxide of Chen, because in such structure the aluminum oxide layer would have good heat conductivity and providing good heat dispersion as taught by Yang, see abstract. Furthermore, aluminum would have better thermal conductivity than that of silicon as confirmed Chen (6599768) in table 1.

Regarding claim 10, Chen discloses the mounting substrate in fig. 18 further comprising third and fourth space apart conductive traces 18/17 on the second face of the solid block a respective one of which is connected to a respective one of the conductive vias 14 (bottom portion).

Regarding claims 11-14, Chen discloses the mounting substrate in combination with the semiconductor light emitting device 3 that is mounted in the cavity and is connected to the first and second spaced apart conductive traces 16/18 fig. 17, further in combination with a lens 23, column 5 line 58, that extends across the cavity, in further combination with an encapsulant 5, column 5 line 27, between the semiconductor light emitting device 3 and the lens 23, and further combination with lens retainer (leg portion of lens 23) on the solid block 8 that is configured to hold the lens 23 across the cavity, fig. 18.

Regarding claim 15, Chen discloses a light emitting device in fig. 18 comprising: a solid silicon block 8 including a cavity 11, in a first face thereof and a conformal silicon oxide layer 15 on a surface thereof including on the cavity 11, fig. 18, first and second spaced apart conductive traces 17/18 on the conformal silicon oxide layer 15 in the cavity 11; a semiconductor light emitting device 3 that is mounted in the cavity 11 and is connected to the first and second spaced apart conductive traces 17/18, a lens 23, fig. 18, that extends across the cavity; and an encapsulant 5 between the semiconductor light emitting device 3 and the lens 23, wherein the first and second spaced apart conductive traces 17/18 extend from the cavity 11 to the first face, around at least one

side (the side is the vertical portion connects to the bottom surface) of the block 8 and onto a second face (bottom) of the block 8 that is opposite the first face, fig. 18.

But, Chen does not disclose a solid block is aluminum and an insulating layer is aluminum oxide.

However, Yang However, Yang discloses a mounting substrate for a semiconductor LED device in fig. 7 wherein the LED is mounting on the aluminum block (metal plate) 43 (0027) comprising conformal insulating coating comprising insulating aluminum oxide layer 42 (0022] completely surrounds the aluminum block 43, fig.7. At the time the invention was made; it would have been obvious to one of ordinary skill in the ad to use the conformal aluminum oxide surrounding the aluminum block teaching of Yang to replace the silicon and silicon oxide of Chen, because in such structure the aluminum oxide layer would have good heat conductivity and providing good heat dispersion as taught by Yang, see abstract. Furthermore, aluminum would have better thermal conductivity than that of silicon as confirmed Chen (6599768) in table 1.

Regarding claims 18, 39, Chen discloses a light emitting device in fig. 18 comprising: a solid silicon block 8 including a cavity 11, in a first face thereof and a conformal silicon oxide layer 15 on a surface thereof including on the cavity 11, fig. 18, first and second spaced apart conductive traces 17/18 on the conformal silicon oxide layer 15 in the cavity 11; a semiconductor light emitting device 3 that is mounted in the cavity 11 and is connected to the first and second spaced apart conductive traces 17/18, a lens 23, fig. 18, that extends across the cavity; and an encapsulant 5 between

the semiconductor light emitting device 3 and the lens 23; wherein the solid silicon block 8 includes first and second through holes14, column 4 line 58 that extend from the first face outside the cavity (the holes 14 are below the cavity; thus they are outside the cavity) to a second face (bottom) of the solid block 8 that is opposite the first face, the respective first and second through holes 14 including a respective first and second conductive via therein that extends from the first face outside the cavity (the conductive 17/18 are below the cavity; thus they are outside the cavity) to the second face (bottom) and wherein a respective one of the spaced apart conductive traces 17/18, column 5 lines 5-10, is electrically connected to a respective one of the conductive vias 14, fig. 18.

But, Chen does not disclose the aluminum block and the first and second respect through holes including the conformal insulating coating thereon comprises aluminum oxide.

However, Yang discloses the mounting substrate in fig. 4 comprising a first face (top surface) and wherein the solid aluminum block 43 (0027) includes therein first and second through holes 45 (0023) that extend from the first face to a second face of the solid aluminum block 43 that is opposite the first face, the respective first and second through holes 45 including a respective first and second conductive via 413 (0023) therein that extends from the first face to the second face and wherein a respective one of the spaced apart conductive traces 411 is electrically connected to a respective one of the conductive vias (413) and wherein the first and second through holes 45 extend the first surface to the

second face. At the time the invention was made; it would have been obvious to one of ordinary skill in the ad to use the through holes comprising conductive vias of LED packaging teaching of Yang with Chen's device, because it would have provided good the thermal dissipation of the LED modules as taught by Yang, see abstract.

Regarding claim 20, Chen discloses the LED further in fig. 18 further comprising third and fourth space apart conductive traces 18/17 on the second face of the solid block a respective one of which is connected to a respective one of the conductive vias 14.

Regarding claims 29-32, Chen discloses the mounting substrate according to claim 9 in combination with the semiconductor light emitting device 3 that is mounted in the cavity and is connected to the first and second spaced apart conductive traces 17/18, fig. 18, further combination with a lens 23 that extends across the cavity 11, fig. 18, further combination with an encapsulant 5 between the semiconductor light emitting device 3 and the lens 23, fig. 18, further combination with a lens retainer (leg portion of 5) on the solid block 8 that is configured to hold the lens across the cavity, fig. 8.

Regarding claims 41-44, Chen discloses the mounting substrate according to claim 33 further in combination with a lens 23, col. 5 line 58, that extends across the cavity 11, in further combination with an encapsulant 5, col. 5 line 52, between the semiconductor light emitting device 3 and the lens 23, further combination with a lens retainer (leg portion of 5) on the block that is configured to hold the lens 23 across the cavity 11, fig. 18.

Response to Arguments

6. Applicant's arguments filed 29 Mar. 2006 have been fully considered but they are not persuasive. The Applicant argues that

a. Chen fails to disclose the first and second conductive traces extend from the cavity to the first face, around at one side of the aluminum block and onto a second face of the aluminum block that is opposite the first face. The is not persuasive because Chen as shown in fig. 18 the spaced apart conductive traces 17 and 18 extend from the cavity to the first face, around at one side of the aluminum block and onto a second face of the aluminum block that is opposite the first face. The side of the block is the left or right vertical portion connects to the bottom surface. Such side portion of Chen would read on the claim language.

b. Chen fails to disclose the holes extend from the first face outside the cavity to the second face. This is not persuasive because Chen as shown in fig. 128 the holes 14 extend from the cavity and they are below the cavity; thus they are outside the cavity. Chen's holes 14 would read on the claim limitations.

c. The discussion with the Applicant's Attorney, Mr. M. Bigel, on 03 May 2006 failed to yield a claim language that could overcome the prior art.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

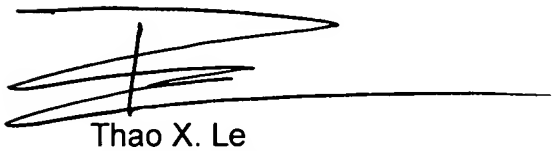
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thao X. Le
04 May 2006